

B3

9. (Amended) A method as in claim [18] 8 wherein [characterized in that] the substrate comprises an anion exchange material.

### REMARKS

Claim 1 now incorporates original claim 5. The amendments to claims 6 and 9 clarify their respective dependencies. No new issues are raised. Applicants therefore request entry of these amendments.

Claims 1 and 3-20 are rejected under 35 USC 103(a) as obvious over DE 3635219A1 in view of Yan '063. The DE reference is already discussed in the Background of Applicant's specification as disclosing the treatment of photographic effluent by oxidation with hydrogen peroxide in the presence of a chromium, vanadium, tungsten or molybdenum compound as catalyst, which is then discharged into the environment. There is no disclosure of such a catalyst being immobilized on a substrate as in the rejected claims.

Yan '063 discloses a method of treating (non-photographic) wastewater comprising directing a source of oxygen over a wastewater containing phenol, cresol, ammonia and optionally sulfite, thiosulfate over a catalyst selected from the group of NiMo, NiW and CoMo on activated carbon temperature of 80°C pressure of from about 10 to about 500 psig.

According to Yan the source of oxygen may not be hydrogen peroxide (see col. 8, lines 11-13). There must be phenol, cresol and ammonia present in the wastewater undergoing treatment, it is clearly not applicable to photographic waste effluent which would not contain at least the first two of these components. The catalyst must be a combination of Group VIII and VIA metals or metal compounds. Catalysts containing copper, cobalt, molybdenum and tungsten alone on activated carbon are ineffective, (col. 11, lines 25-26). The lowest temperature considered possible for the Yan process is 50°C (see col. 7, line 56), the preferred range is 80°C - 145°C. A pressure of 0-2000 psig is disclosed in Yan (col. 7, line 55) but the preferred range is 10 to about 500 psig, i.e. for effective working of the invention both a raised temperature and pressure is required.

In the Applicants specification the invention is limited to the use of hydrogen peroxide (or a compound capable of producing hydrogen peroxide) and not air for treating photographic effluent (which does not contain cresol or phenol). Only the oxidized form of a single transition metal is now included within the scope of the Applicants invention, namely the catalyst is selected from a molybdate, a tungstate, a chromate and a vanadate. The Applicants invention may be carried out at room temperature and under atmospheric pressure.

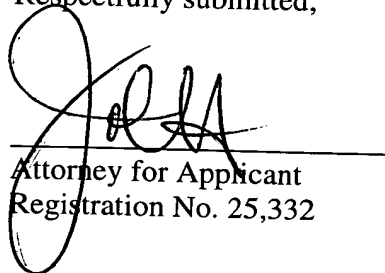
It is submitted that the Yan reference specifically teaches away from the present invention in being limited to a combination of Group VIII and a Group VIA metal or compound with a direct instruction that copper, cobalt, molybdenum and tungsten alone are ineffective for the purpose of that invention. The Examiner has relied on the passage on col. 5, lines 25-31 of Yan as apparently teaching that the molybdate and tungstate forms of the metal may be impregnated into the support. However, it is pointed out with respect that this paragraph refers back to the previous one which state that impregnation of the combination of metals or metal compounds can be either sequential or carried out in one step.

Indeed the examples further confirm that a combination is required. Comparative examples 1-9 having a single metal on a support show negligible removal of phenol and cresol even at high temperatures and pressures. In contrast catalysts using CoMo and NiW in particular showed a very large removal of phenol and cresol, up to 99% of each in some cases. The skilled man would not be led by the teaching in this document that unwanted species from photographic effluent, which do not contain cresol or phenol, could be treated by hydrogen peroxide, which is specifically contraindicated in Yan, by the use of the oxidized form of a single transition metal immobilized on a substrate, which is taught in Yan to be ineffective. Although the Applicants application is not so limited, nor would it have been predicted that the Applicants invention could be achieved so simply under condition of ambient temperature and pressure.

It is respectfully submitted that the clear teaching from Yan is directly away from the present invention and this reference alone or in combination with DE reference does not render obvious the claims as now limited.

In light of the above amendments and remarks, Applicants respectfully request that the amended claims be allowed.

Respectfully submitted,



Attorney for Applicant  
Registration No. 25,332

John R. Everett/ced  
Telephone: (716) 722-2776  
Facsimile: (716) 477-1148  
23-Nov-98